In the Claims:

1. (Withdrawn) An immersion lithographic system comprising:

an optical surface;

a wafer support for holding a workpiece; and

an immersion fluid with a pH less than 7, disposed between the optical surface and the wafer support, said immersion fluid contacting at least a portion of the optical surface.

2. (Withdrawn) The system of claim 1 wherein the immersion fluid comprises water.

3. (Withdrawn) The system of claim 2 wherein the pH of said immersion fluid is in the range of 2 to 7.

4. (Withdrawn) The system of claim 3 wherein the pH of said immersion fluid is in the range of 4 to 7.

5. (Withdrawn) The system of claim 4 wherein the pH of said immersion fluid is in the range of 5 to 7.

6. (Withdrawn) The system of claim 5 wherein the pH of said immersion fluid is in the range of 6 to 7.

7. (Withdrawn) The system of claim 1 wherein the immersion fluid comprises hydrogen ions with a concentration in the range of 10^{-7} to 10^{-2} mole/L.

8. (Withdrawn) The system of claim 1 wherein the immersion fluid comprises hydrogen ions with a concentration in the range of 10^{-7} to 10^{-4} mole/L.

9. (Withdrawn) The system of claim 1 wherein the immersion fluid comprises hydrogen ions with a concentration in the range of 10^{-7} to 10^{-5} mole/L.

10. (Withdrawn) The system of claim 1 wherein the immersion fluid comprises hydrogen ions with a concentration in the range of 10^{-7} to 10^{-6} mole/L.

11. (Withdrawn) The system of claim 1 wherein the optical surface comprises silicon oxide.

12. (Withdrawn) The system of claim 1 wherein the optical surface comprises fused silica.

13. (Withdrawn) The system of claim 1 wherein the optical surface comprises calcium fluoride.

14. (Withdrawn) The system of claim 13 further comprising a fluoride-containing compound dissolved in the immersion fluid.

15. (Withdrawn) The system of claim 14 wherein the fluoride containing compound comprises at least one material selected from the group consisting of sodium fluoride, potassium fluoride, hydrogen fluoride, and combinations thereof.

16. (Withdrawn) The system of claim 13 wherein the immersion fluid comprises fluoride ions with a concentration in the range of greater than 0.01 mole/L.

17. (Withdrawn) The system of claim 16 wherein the immersion fluid comprises fluoride ions with a concentration in the range of greater than 0.05 mole/L.

18. (Withdrawn) The system of claim 17 wherein the immersion fluid comprises fluoride ions with a concentration in the range of greater than 0.1 mole/L.

19. (Withdrawn) The system of claim 1 further comprising a semiconductor structure on the wafer support structure, said semiconductor structure having a topmost photosensitive layer.

20. (Withdrawn) The system of claim 19 wherein the photosensitive layer comprises a chemically amplified photoresist.

21. (Withdrawn) The system of claim 19 wherein the immersion fluid is in contact with a portion of the photosensitive layer.

22. (Withdrawn) The system of claim 19 wherein the semiconductor structure is immersed in the immersion fluid.

23. (Withdrawn) The system of claim 19 wherein the semiconductor structure comprises an integrated circuit that includes transistors with a gate length not greater than 50 nm.

24. (Withdrawn) The system of claim 19 wherein the wafer support is immersed in the immersion fluid.

25. (Withdrawn) An immersion lithographic system for projecting light having a wavelength of less than 197 nm, the system comprising:

an optical surface;

water with a pH less than 7, said water contacting at least a portion of the optical surface; and

a semiconductor structure having a topmost photoresist layer, a portion of said photoresist being in contact with the water.

26. (Withdrawn) The system of claim 25 wherein the pH of the water is in the range of 2 to 7.

27. (Withdrawn) The system of claim 26 wherein the pH of the water is in the range of 5 to 7.

28. (Withdrawn) The system of claim 27 wherein the pH of the water is in the range of 6 to 7.

29. (Withdrawn) The system of claim 25 wherein the optical surface comprises silicon oxide.

30. (Withdrawn) The system of claim 25 wherein the optical surface comprises calcium fluoride.

31. (Withdrawn) The system of claim 25 further comprising a fluoride containing compound dissolved in the water.

32. (Withdrawn) The system of claim 31 wherein the fluoride containing compound comprises at least one material selected from the group consisting of sodium fluoride, potassium fluoride, hydrogen fluoride, and combinations thereof.

33. (Withdrawn) The system of claim 25 wherein the water comprises fluoride ions with a concentration in the range of greater than 0.01 mole/L.

34. (Withdrawn) The system of claim 25 wherein the photoresist layer comprises a chemically amplified photoresist.

35. (Withdrawn) The system of claim 25 wherein the semiconductor structure is immersed in the water.

36. (Withdrawn) The system of claim 25 further comprising a wafer support underlying the semiconductor structure.

37. (Withdrawn) The system of claim 36 wherein the wafer support is immersed in the water.

38. (Currently Amended) A method for illuminating a semiconductor structure having a topmost photoresist layer, comprising the steps of:

introducing an immersion fluid comprising water into a space between an optical surface and the photoresist layer, said immersion fluid having a pH of less than 7; and

directing optical energy through the immersion fluid and onto said photoresist layer.

39. (Canceled)

40. (Currently Amended) The method of claim 38 wherein the pH of the immersion fluid is between 2 and about 7 ~~in the range of 2 to 7~~.

41. (Currently Amended) The method of claim 40 wherein the pH of the immersion fluid is between 4 and about 7 ~~in the range of 4 to 7~~.

42. (Currently Amended) The method of claim 41 wherein the pH of the immersion fluid is between 5 and about 7 ~~in the range of 5 to 7~~.

43. (Currently Amended) The method of claim 42 wherein the pH of the immersion fluid is between 6 and about 7 ~~in the range of 6 to 7~~.

44. (Original) The method of claim 38 wherein the immersion fluid comprises hydrogen ions with a concentration in the range of 10^{-7} to 10^{-2} mole/L.

45. (Original) The method of claim 44 wherein the immersion fluid comprises hydrogen ions with a concentration in the range of 10^{-7} to 10^{-4} mole/L.

46. (Original) The method of claim 45 wherein the immersion fluid comprises hydrogen ions with a concentration in the range of 10^{-7} to 10^{-5} mole/L.

47. (Original) The method of claim 46 wherein the immersion fluid comprises hydrogen ions with a concentration in the range of 10^{-7} to 10^{-6} mole/L.

48. (Original) The method of claim 38 wherein the optical surface comprises silicon oxide.

49. (Original) The method of claim 38 wherein the optical surface comprises calcium fluoride.

50. (Canceled)

51. (Currently Amended) The method of claim 49 [[50]] further comprising a fluorine ~~fluoride~~ containing compound dissolved in the water.

52. (Currently Amended) The method of claim 51 wherein the fluorine ~~fluoride~~ containing compound comprises a compound selected from the group consisting of sodium fluoride, potassium fluoride, hydrogen fluoride, and [[or]] combinations thereof.

53. (Original) The method of claim 49 wherein the immersion fluid comprises fluoride ions with a concentration in the range of greater than 0.01 mole/L.y

54. (Original) The method of claim 49 wherein the immersion fluid comprises fluoride ions with a concentration in the range of greater than 0.05 mole/L.

55. (Original) The method of claim 49 wherein the immersion fluid comprises fluoride ions with a concentration in the range of greater than 0.1 mole/L.

56. (Original) The method of claim 38 wherein the photoresist layer comprises a chemically amplified photoresist.

57. (Original) The method of claim 38 wherein the immersion fluid is in contact with a portion of the photoresist layer.

58. (Original) The method of claim 38 wherein the semiconductor structure is immersed in the immersion fluid.

59. (Original) The method of claim 38 further comprising a wafer support underlying the semiconductor structure.

60. (Original) The method of claim 59 wherein the wafer support is immersed in the immersion fluid.

61. (Original) The method of claim 38 further comprising a step of developing the photoresist layer.

62. (Original) The method of claim 61 wherein the step of developing the photoresist layer comprises immersing the photoresist in a tetramethylammonia hyroxide solution.

63. (Original) A method for illuminating a semiconductor structure having a topmost photoresist layer, comprising the steps of:

introducing water into a space between an optical surface and the photoresist layer said water having a pH of less than 7; and

directing light with a wavelength of less than 450 nm through the water and onto said photoresist.

64. (Currently Amended) The method of claim 63 wherein the pH of the water is in the range of 2 to <u>about</u> 7.

65. (Currently Amended) The method of claim 64 wherein the pH of the water is in the range of 5 to <u>about</u> 7.

66. (Currently Amended) The method of claim 65 wherein the pH of the water is in the range of 6 to about 7.

67. (Original) The method of claim 63 wherein the optical surface comprises silicon oxide.

68. (Original) The method of claim 63 wherein the optical surface comprises calcium fluoride.

69. (Currently Amended) The method of claim 63 further comprising a fluorine ~~fluoride~~ containing compound dissolved in the water.

70. (Currently Amended) The method of claim 69 wherein the fluorine ~~fluoride~~ containing compound comprises a compound selected from the group consisting of sodium fluoride, potassium fluoride, hydrogen fluoride, and combinations thereof.

71. (Original) The method of claim 63 wherein the water comprises fluoride ions with a concentration in the range of greater than 0.01 mole/L.

72. (Original) The method of claim 63 wherein the photoresist layer comprises a chemically amplified photoresist.

73. (Original) The method of claim 63 wherein the semiconductor structure is immersed in the water.

74. (Original) The method of claim 63 further comprising a wafer support underlying the semiconductor structure.

75. (Original) The method of claim 74 wherein the wafer support is immersed in the water.